

the oligonucleotides attached to the nanoparticles of the first type of conjugates having a sequence complementary to that of the oligonucleotides attached to the nanoparticles of the second type of conjugates;

the oligonucleotides attached to the nanoparticles of the second type of conjugates having a sequence complementary to that of the oligonucleotides attached to the nanoparticles of the first type of conjugates; and

contacting the first and second types of conjugates under conditions effective to allow hybridization of the oligonucleotides on the nanoparticles of the conjugates to each other so that a desired nanomaterial or nanostructure is formed.

428. A method of nanofabrication comprising:

providing at least two types of nanoparticles according to any one of Claims 243-265,

the recognition oligonucleotides on the first type of nanoparticles comprising a sequence complementary to that of the oligonucleotides on the second of the nanoparticles;

the recognition oligonucleotides on the second type of nanoparticles comprising a sequence complementary to that of the oligonucleotides on the first type of nanoparticles; and

contacting the first and second types of nanoparticles under conditions effective to allow hybridization of the oligonucleotides on the nanoparticles to each other so that a desired nanomaterial or nanostructure is formed.

429. Nanomaterials or nanostructures composed of nanoparticle-oligonucleotide conjugates according to any one of Claims 237-242, the nanoparticles being held together by oligonucleotide connectors.

430. Nanomaterials or nanostructures composed of nanoparticles according to any one of Claims 243-265, the nanoparticles being held together by oligonucleotide connectors.

431. A method of separating a selected nucleic acid having at least two portions from other nucleic acids, the method comprising:

providing two or more types of nanoparticle-oligonucleotide conjugates according to any one of Claims 237-242, the oligonucleotides attached to the nanoparticles of each of the types of conjugates having a sequence complementary to the sequence of one of the portions of the selected nucleic acid; and

contacting the nucleic acids and conjugates under conditions effective to allow hybridization of the oligonucleotides on the nanoparticles of the conjugates with the selected nucleic acid so that the conjugates hybridized to the selected nucleic acid aggregate and precipitate.

432. A method of separating a selected nucleic acid having at least two portions from other nucleic acids, the method comprising:

providing two or more types of nanoparticles according to any one of Claims 243-265, the oligonucleotides on each of the types of nanoparticles having a sequence complementary to the sequence of one of the portions of the selected nucleic acid; and

contacting the nucleic acids and nanoparticles under conditions effective to allow hybridization of the oligonucleotides on the nanoparticles with the selected nucleic acid so that the nanoparticles hybridized to the selected nucleic acid aggregate and precipitate.